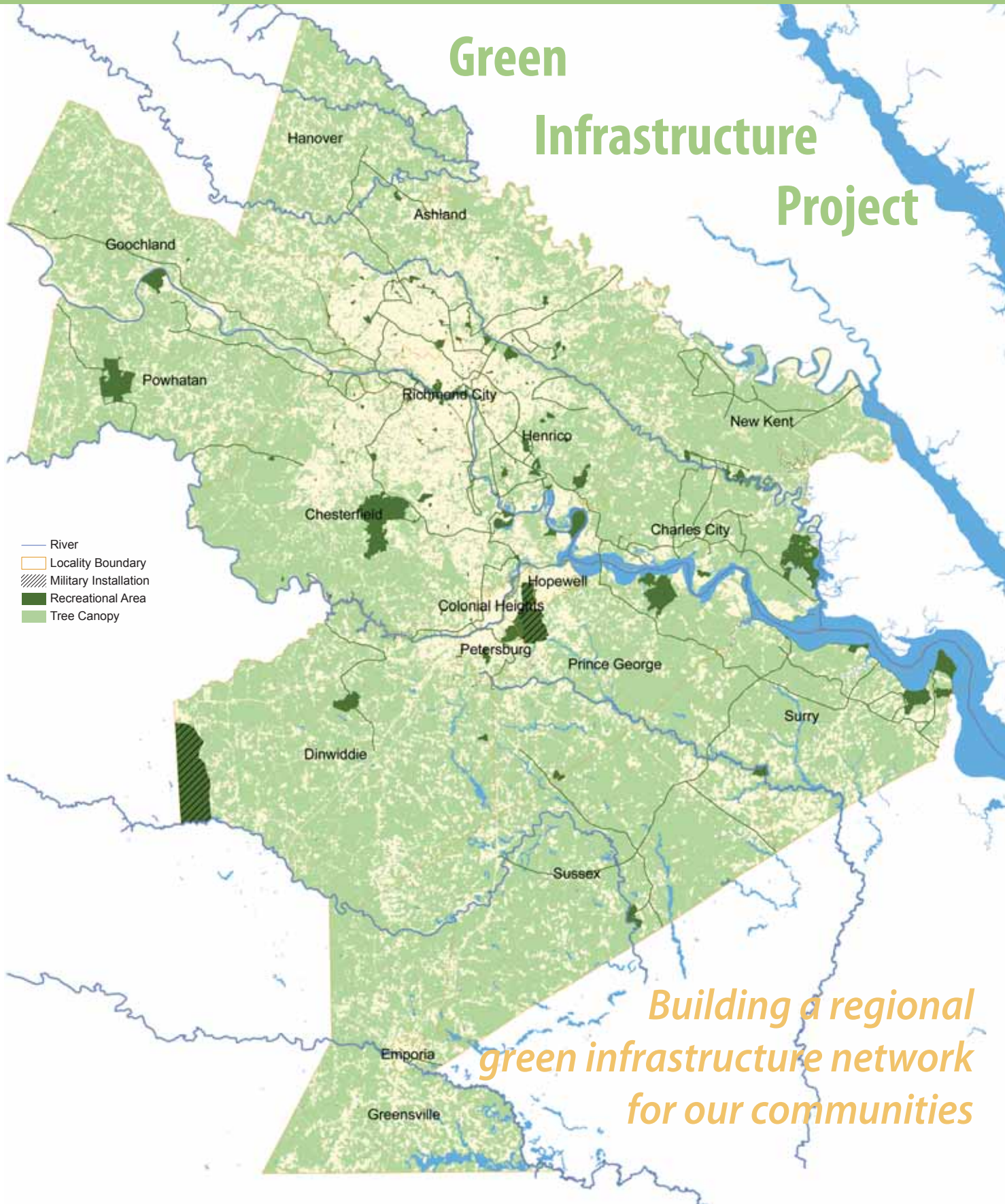


# The Richmond-Crater Region

## Green Infrastructure Project



*Building a regional  
green infrastructure network  
for our communities*



# WELCOME

Between October 2008 and October 2009, the Richmond Regional Planning District Commission (RRPDC), the Crater Planning District Commission (CPDC), the Green Infrastructure Center, and the Capital Regional Land Conservancy undertook a cooperative project to document the Richmond and Crater Regions' green infrastructure assets.

Throughout the year, workshops were held that brought together regional planners, local governments, state and federal agencies, and other interested organizations to discuss the region's green infrastructure assets and priorities.

This summary report presents a resource for green infrastructure planning activities across and among the Richmond and Crater Regions.

## WHAT'S INSIDE

REGIONAL GREEN INFRASTRUCTURE ASSETS

OPPORTUNITIES & LESSONS LEARNED

NEXT STEPS AND IMPLEMENTATION

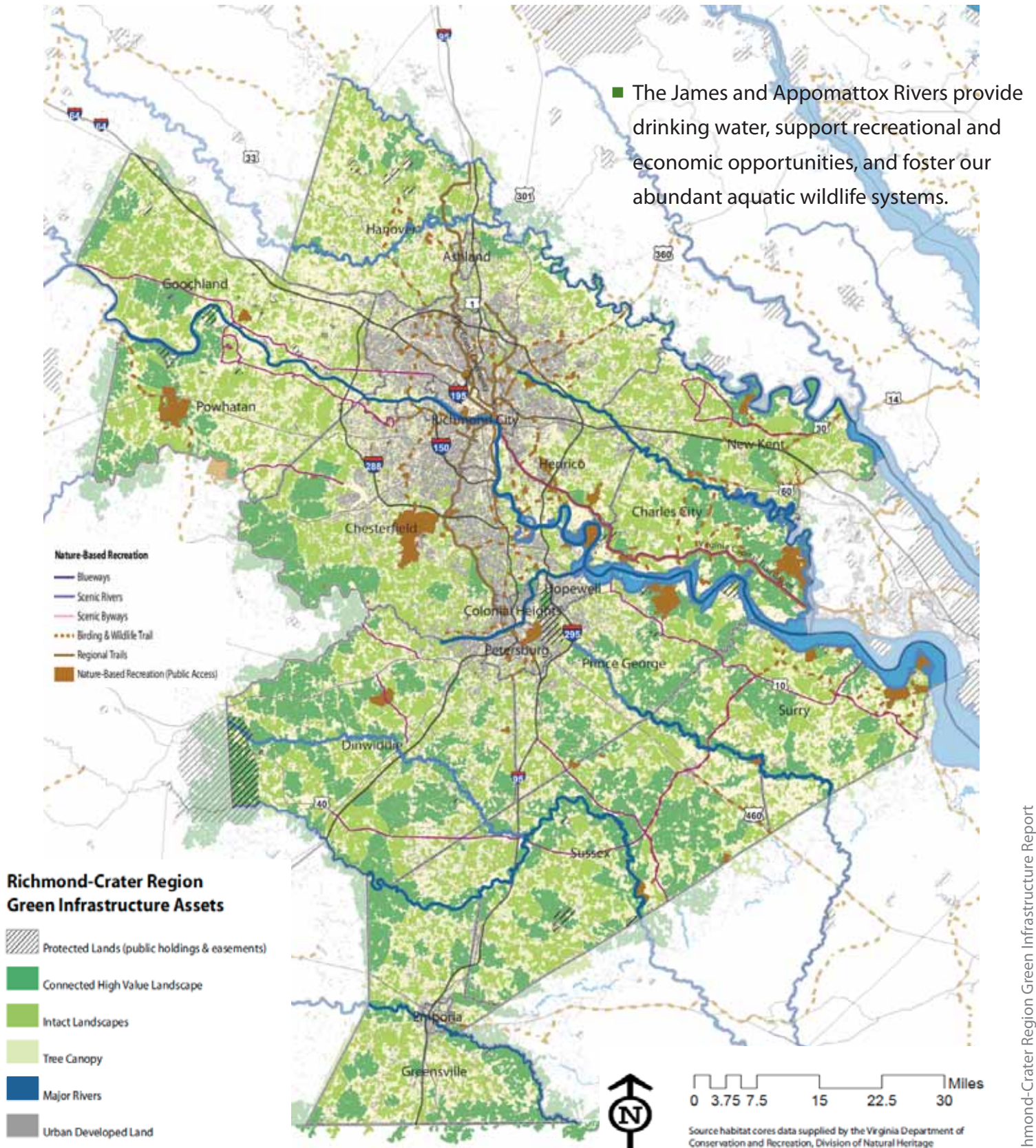


- The region's forests are a renewable economic resource that purify the region's air and water, prevent soil erosion, and support biodiversity.
- More than 2800 farms covering approximately 558,000 acres provide habitat, filter water, and sequester carbon as well as sustain the region's agricultural economy. [USDA Census of Agriculture, 2007]
- Area trails, parks, and historical sites connect communities with the region's rich natural and human history.
- State and federal wildlife areas provide habitat as well as opportunities for recreation, environmental education, and bird watching.





# THE RICHMOND AND CRATER REGIONS are home to some of the Commonwealth's rich, diverse green infrastructure.







*Rockahock - a recreational destination - on the banks of the Chickahominy River*

Image: Dramstad, Wenche E., et al. *Landscape Ecology Principles in Landscape Architecture and Land Use Planning*. Washington D.C., Island Press, 1996.

# WHAT IS GREEN INFRASTRUCTURE?

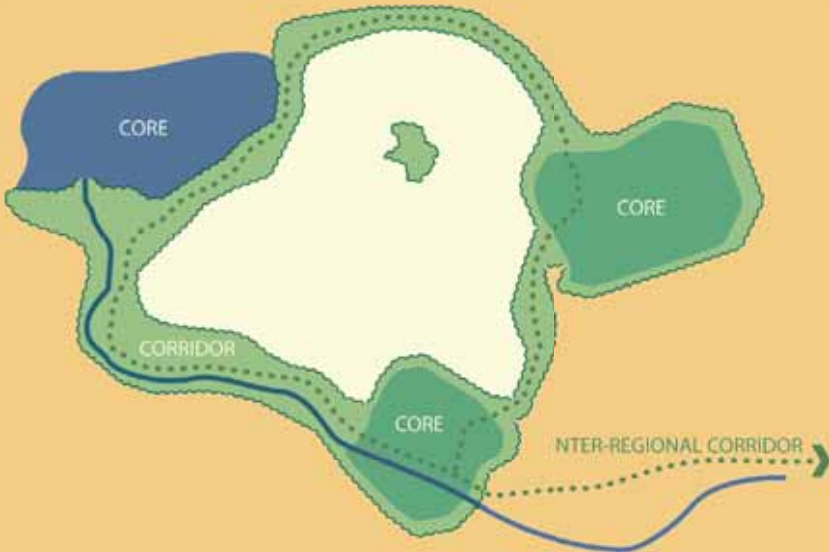
Green infrastructure is the natural resources and working lands that provide our clean water and air, ensure our quality of life, and sustain our economy.

Virginia's rich green infrastructure resources include our forests, waterways and bays, soils, wildlife areas, wetlands, dunes, historic landscapes, and parks.

Green infrastructure is woven throughout our towns, cities, and subdivisions as well as across our mountains, valleys, and shores.

Green infrastructure planning connects intact habitat areas (cores) through a network of corridors to allow people, wildlife, and plants to move across the landscape. A connected landscape makes species less susceptible to extinction while allowing for both conservation and recreation.

The results: better land use planning, protected green infrastructure, and healthier communities.



*A green infrastructure network is made up of connected core habitats and connecting corridors that help animals, seeds, and people move across the landscape.*

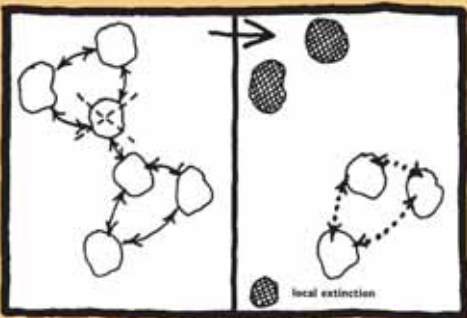
# GREEN INFRASTRUCTURE IN VIRGINIA

The Virginia Natural Heritage Program in the Department of Conservation and Recreation has developed the Virginia Natural Landscape Assessment (VaNLA) for identifying, prioritizing, and linking natural lands in Virginia. These natural lands, or cores, are assigned an Ecological Integrity Score. In general, higher scores are given to areas that are more biologically diverse, part of a larger complex of natural lands, and contribute to water quality enhancement.

The maps on pages 5, 6, and 7 demonstrate the distribution of natural lands by ecological integrity across the Richmond-Crater Region.

## CONNECTION IS KEY

Maintaining intact natural landscapes is essential for our basic ecosystem services. Fragmentation not only results in the loss of habitat and natural corridors but also the degradation of important ecosystem functions that provide us with ecosystem services like clean air and water, assistance with climate regulation and buffers to the impacts of natural disasters.



*When a core is removed, connectivity is lost resulting in local species extinction.*

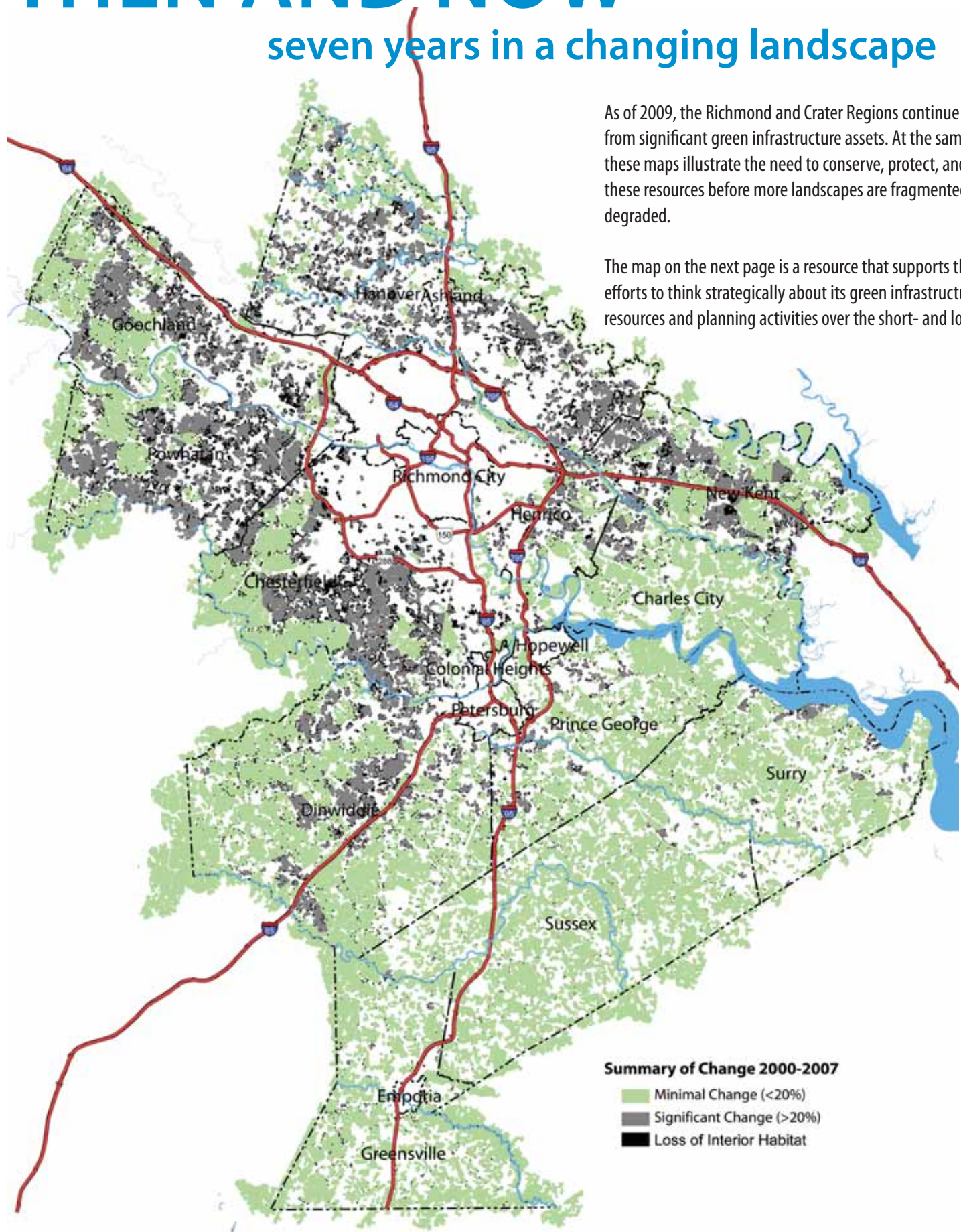


# THEN AND NOW

## seven years in a changing landscape

As of 2009, the Richmond and Crater Regions continue to benefit from significant green infrastructure assets. At the same time, these maps illustrate the need to conserve, protect, and restore these resources before more landscapes are fragmented or degraded.

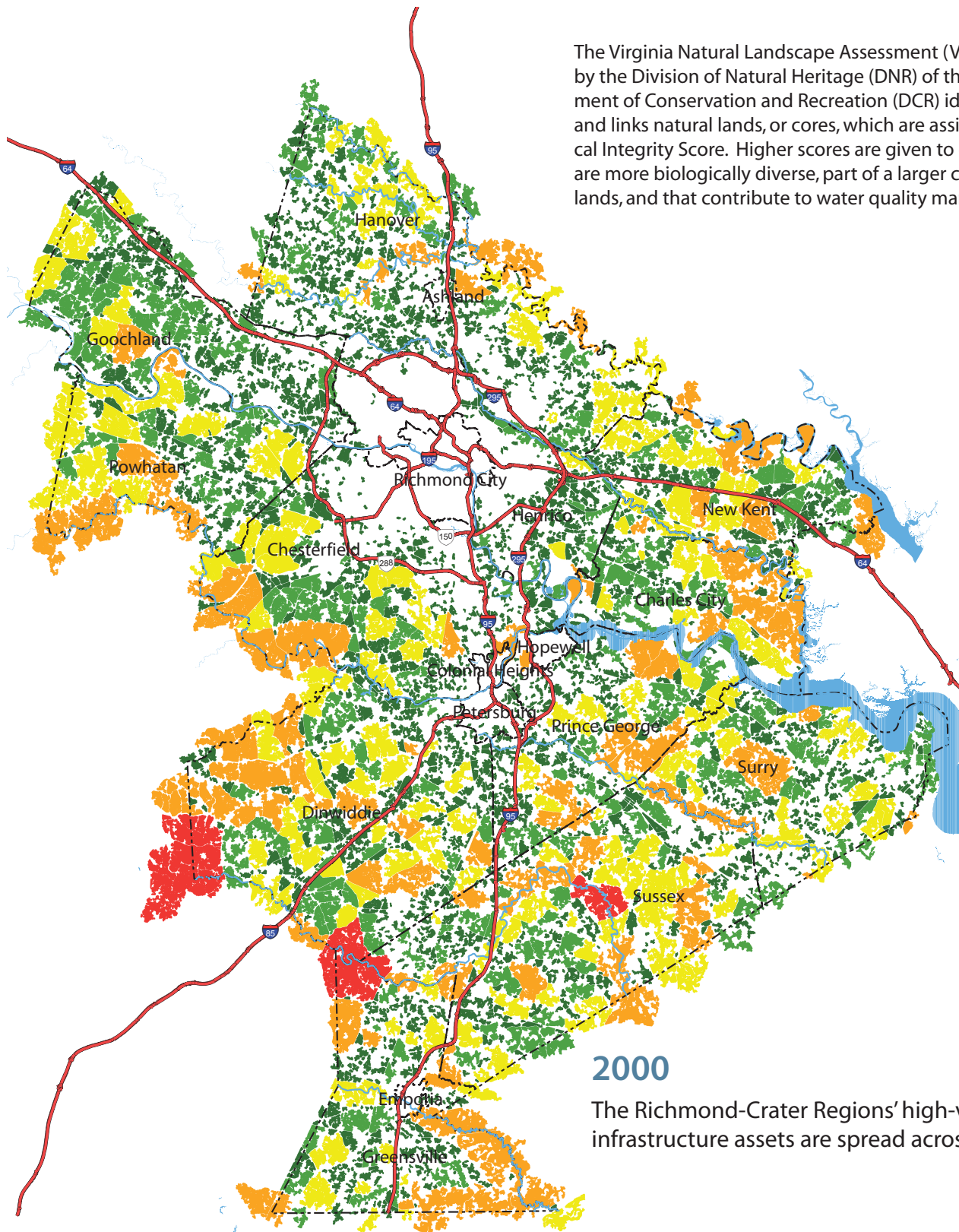
The map on the next page is a resource that supports the region's efforts to think strategically about its green infrastructure resources and planning activities over the short- and long-term.





# Richmond-Crater Region:

The Virginia Natural Landscape Assessment (VaNLA) developed by the Division of Natural Heritage (DNR) of the Virginia Department of Conservation and Recreation (DCR) identifies, prioritizes and links natural lands, or cores, which are assigned an Ecological Integrity Score. Higher scores are given to core areas that are more biologically diverse, part of a larger complex of natural lands, and that contribute to water quality management.



2000

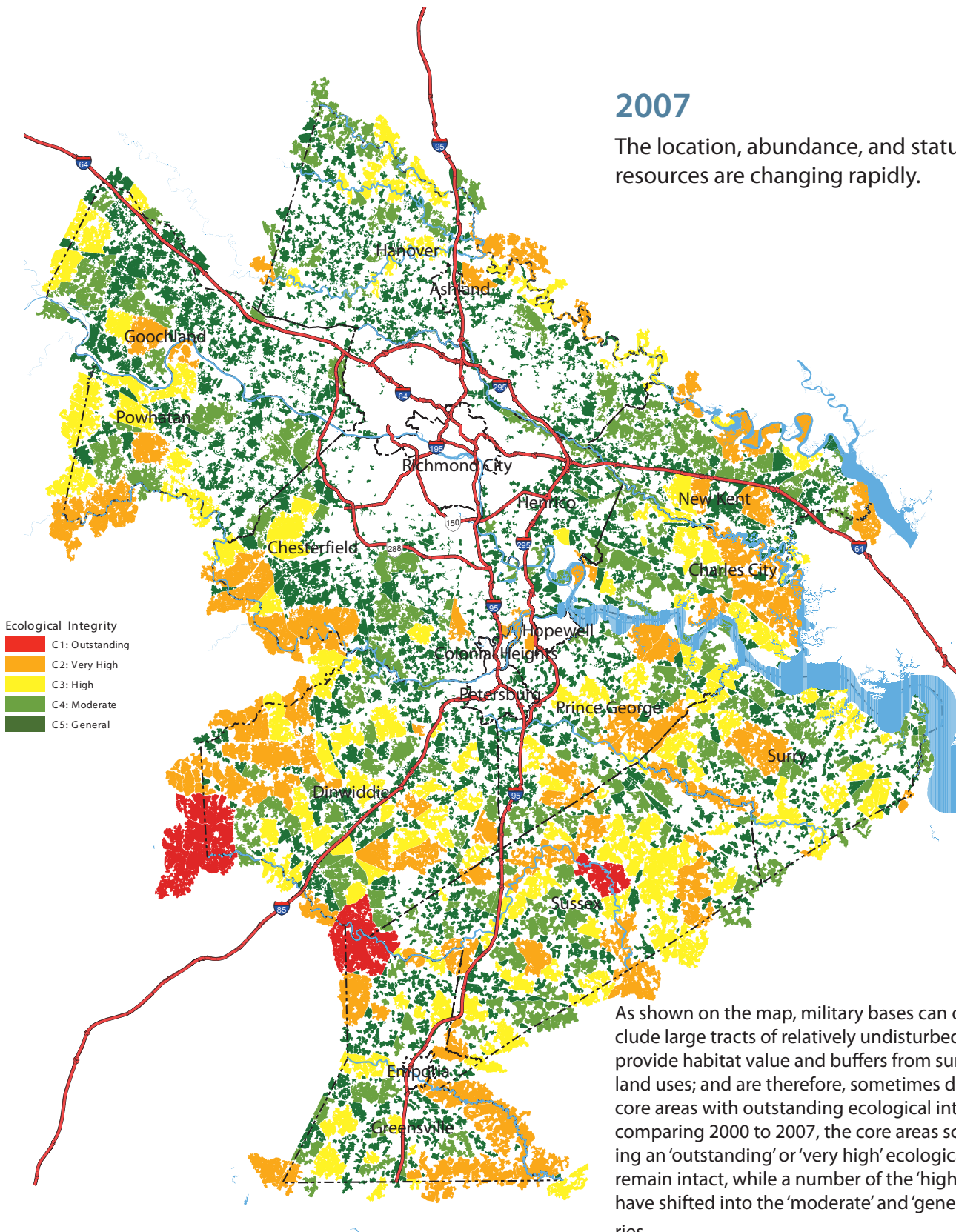
The Richmond-Crater Regions' high-value green infrastructure assets are spread across the region.



# Ecological Integrity

2007

The location, abundance, and status of these resources are changing rapidly.



As shown on the map, military bases can often include large tracts of relatively undisturbed land that provide habitat value and buffers from surrounding land uses; and are therefore, sometimes depicted as core areas with outstanding ecological integrity. In comparing 2000 to 2007, the core areas scored as having an 'outstanding' or 'very high' ecological integrity remain intact, while a number of the 'high' value areas have shifted into the 'moderate' and 'general' categories.



# STRATEGIC GREEN INFRASTRUCTURE

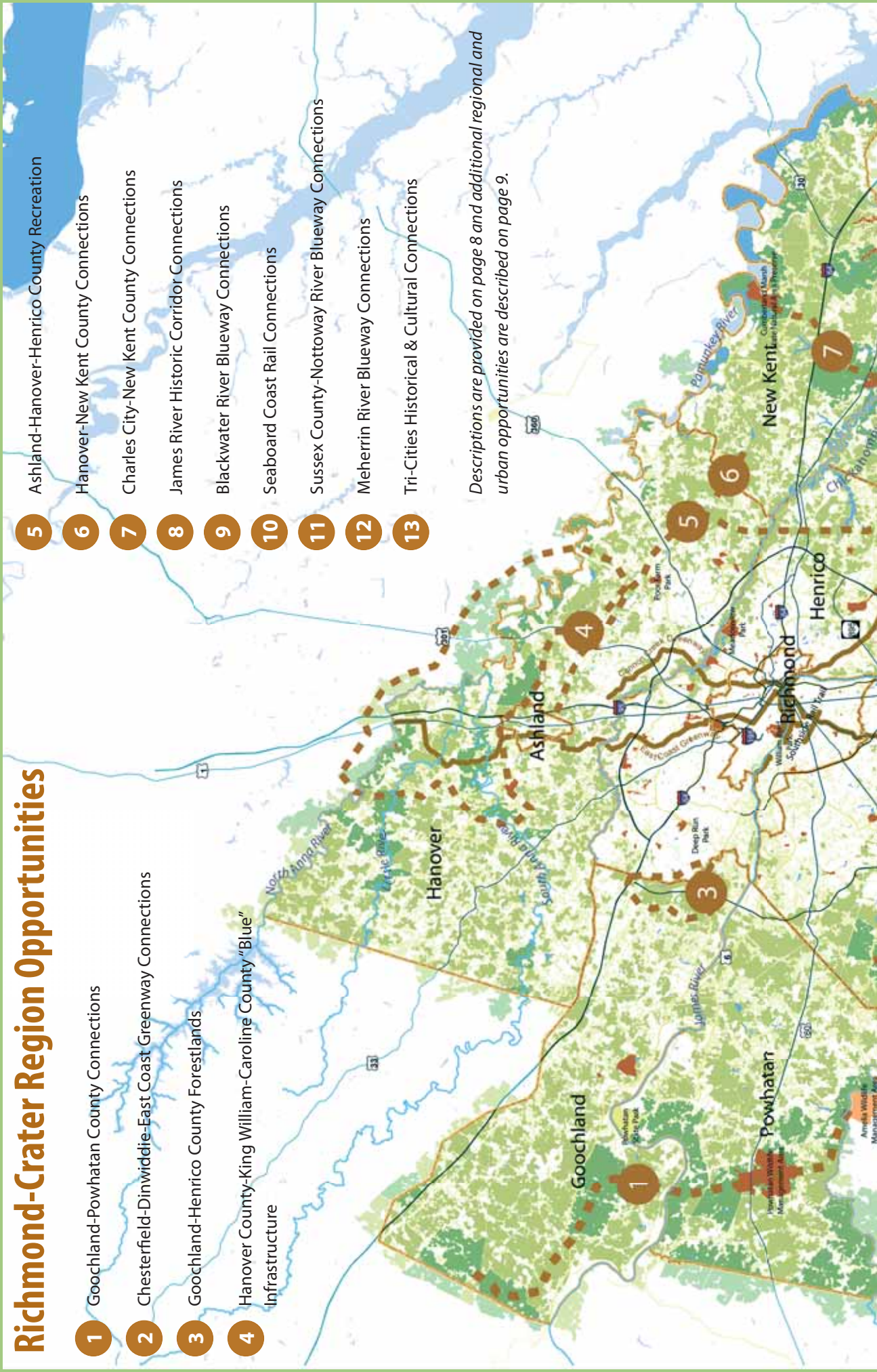
## a base map for regional planning

### Richmond-Crater Region Opportunities

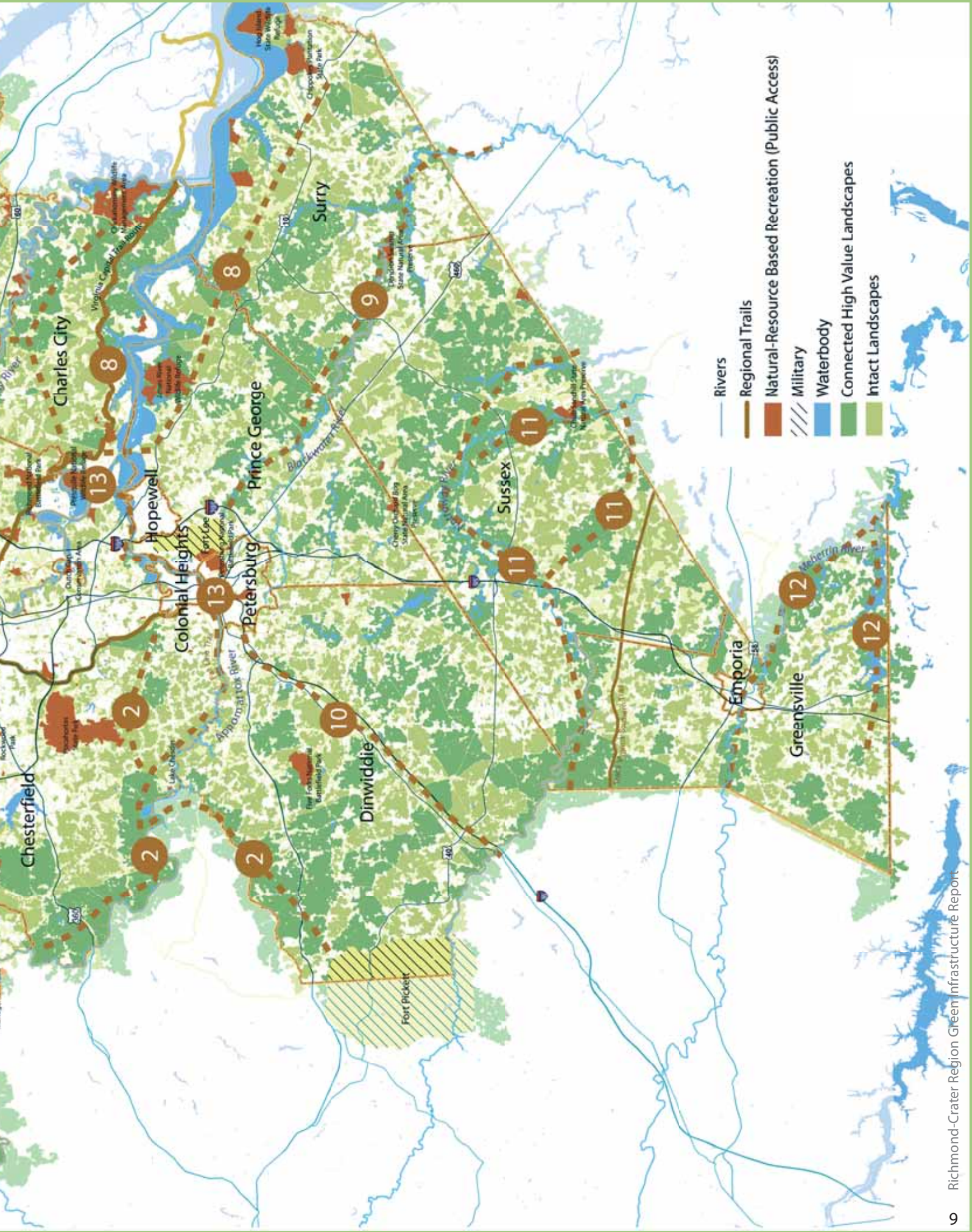
- 1 Goochland-Powhatan County Connections
- 2 Chesterfield-Dinwiddie-East Coast Greenway Connections
- 3 Goochland-Henrico County Forestlands
- 4 Hanover County-King William-Caroline County "Blue" Infrastructure

- 5 Ashland-Hanover-Henrico County Recreation
- 6 Hanover-New Kent County Connections
- 7 Charles City-New Kent County Connections
- 8 James River Historic Corridor Connections
- 9 Blackwater River Blueway Connections
- 10 Seaboard Coast Rail Connections
- 11 Sussex County-Nottoway River Blueway Connections
- 12 Meherrin River Blueway Connections
- 13 Tri-Cities Historical & Cultural Connections

*Descriptions are provided on page 8 and additional regional and urban opportunities are described on page 9.*









# RICHMOND-CRATER REGION OPPORTUNITIES

## from mapping to strategies

Participants used the project's green infrastructure mapping on the previous page to identify a range of opportunities for cross-locality coordination.

- 1 Goochland-Powhatan County Connections:**  
Opportunity to connect high value cores across public and private lands, including wildlife management areas and conserved lands
- 2 Chesterfield-Dinwiddie-East Coast Greenway Connections:**  
Opportunity to maintain corridor in southwest Chesterfield County and northwest Dinwiddie and provide a trail and habitat connections between Pochahontas State Park - Lake Chesdin -Dinwiddie Civil War Trail - Fort Pickett - East Coast Greenway (this corridor also contributes to the Appomattox River riparian buffer)
- 3 Goochland-Henrico County Forestlands:**  
Coordination opportunity for large intact forest tracts located around the future Tuckahoe Creek Park
- 4 Hanover-King William-Caroline County "Blue" Infrastructure:**  
Opportunity for coordination between neighboring localities on riparian protection, including public and private lands along the Pamunkey and South Anna rivers
- 5 Ashland-Hanover-Henrico County Recreation:**  
Potential scenic bike route opportunity along Route 76 to Route 5 with opportunities for linkages between historic, cultural, and natural resources stretching from the Town of Ashland to the City of Petersburg
- 6 Hanover-New Kent County Connections:**  
Connection opportunity through public and private lands located along county borders
- 7 Charles City-New Kent County Connections:**  
Opportunity to connect high value cores across public and private lands, including wildlife management areas, state forest, natural areas, and north to the Pamunkey River
- 8 James River Hitoric Corridor Connections:**  
Corridors on the north and south banks of the James River as it runs through rural eastern Henrico, Charles City, Prince George and Surry Counties contain an abundance of historical, cultural, and natural resources including various historical plantations, the John Smith Heritage Trail and the Capital to Capital Trail.



*Workshop participants discuss regional opportunities*



Opportunities to protect forested buffers, to enhance public access and to connect these water resources.

9

**Blackwater River Blueway Connections:** Opportunity to preserve forested river corridor from its headwaters in Prince George County, through Sussex and Surry Counties, and the Dendron Swamp State Natural Area Preserve.

10

**Seaboard Coast Rail Connections:** Opportunity to adapt abandoned rail or rapid-rail corridor into a multi-use rail-to-trail conversion or rail-with-trail facility with potential to tie in to the East Coast Greenway.

11

**Sussex County-Nottoway River Blueway Connections:** Opportunities to protect water quality and expand water access along the Nottoway River as it winds its way through Sussex County into Southampton County. Potential to connect to the proposed Trans-Virginia Southern Trail.

12

**Meherrin River Blueway Connections:** Opportunity to protect the forested Meherrin River corridor, protect viewsheds, enhance public water access and cultivate connections between the City of Emporia through Greenville County.

13

**Tri-Cities Historical and Cultural Connections:** Opportunity to connect multiple historical, cultural, and natural resources in various localities in the two planning district commissions. Resources linked include Lake Chesdin, the Appomattox River, Petersburg National Battlefield Park, Grant's Headquarters at City Point in Hopewell, Presquile National Wildlife Refuge, and Richmond National Battlefield Park sites in eastern Henrico and Hanover Counties, with linkages extending as far north as Ashland.



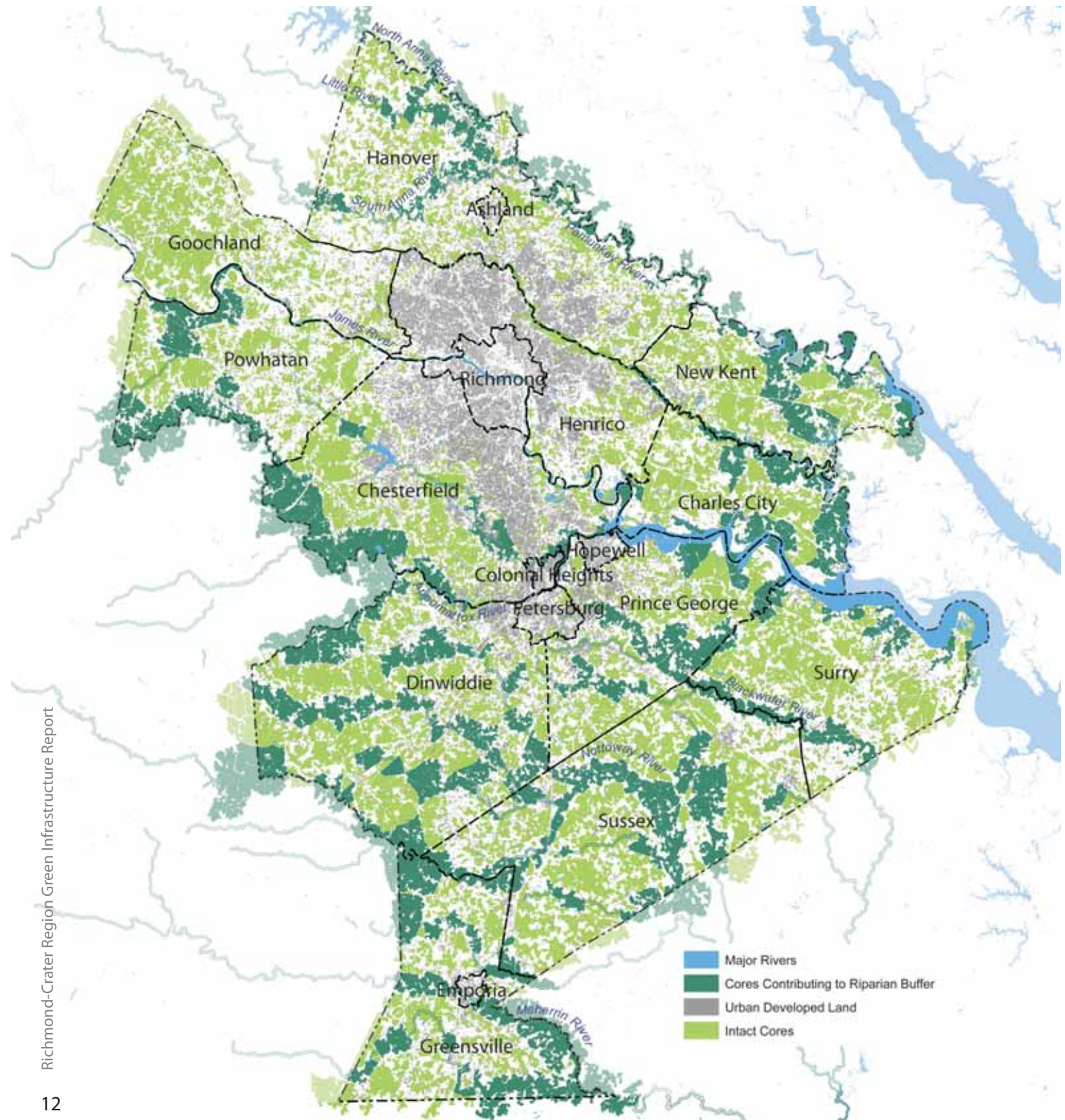
Large metropolitan areas could easily save hundreds of millions of dollars by increasing their tree cover by just 5 to 7 percent. (Moll, 2005)



# Water Resource Opportunities

Participants identified the region's riparian network as a major asset, and identified cores along the Appomattox River, James River, Pamunkey River, South Anna River, Blackwater River, Nottoway River, Meherrin River, and Chickahominy River as primary areas of focus for the future. These rivers and their surrounding areas provide many green infrastructure values:

- buffered streams provide natural corridors and are important for water quality and wildlife habitat; and
- riparian areas can be connected to other high value areas, can provide scenic beauty, and are desirable areas for recreation and parks.





# Urban Connections

While the Richmond-Crater Region Green Infrastructure project focused on regional opportunities and connections, the participants also identified opportunities within the urban areas:

## Richmond Region

- reforest sections of the James River in the City of Richmond as it serves as a major corridor across the region and provides a central hub for regional recreation access
- connect Bryan Park to the James River
- connect Glen Lee Recreation area to the Chickahominy River corridor
- buffer and protect existing birding and wildlife trails



## Tri-Cities Region

- establish a Greenway/Blueway System along the Lower Appomattox River to connect all recreational, cultural and natural features, and historic sites on both sides of the River
- protect and conserve the Appomattox River while promoting safe and responsible river usage
- connect Petersburg National Battlefield Park and Dinwiddie Civil War Trail to the Appomattox River
- enhance and promote tourism opportunities in the region
- promote and continue expansion of East Coast Greenway designation in the region



## Emporia Region

- protect and enhance the forested Meherrin River corridor by creating additional public water access and trail connections between the City of Emporia through Greensville County
- north of Emporia, the proposed Trans-Virginia Southern Trail will stretch from the Cumberland Plateau to the Chesapeake Bay using the abandoned Norfolk Southern Virginia rail corridor and the Lake Gaston-Virginia Beach water pipeline corridor across Sussex and Greensville counties





## LESSONS LEARNED

- The project's meetings and workshops brought together localities, agencies, and organizations to discuss the Richmond and Crater Regions' green infrastructure assets. The energy, new ideas, and relationships forged during these meetings illustrates that **inter-locality collaboration is not only possible, but a helpful opportunity for green infrastructure planning activities in the region.**
- Green infrastructure planning provides an opportunity for the Richmond and Crater Regions to manage growth and development within the context of their high-value natural assets. Looking to the future, **green infrastructure planning provides a road map for public and private-sector parties to coordinate projects to maximize economic and environmental outcomes.** Examples might include successful regional heritage tourism programs and intact healthy forest lands for long-term timber management.
- Economic development and green infrastructure planning are not mutually exclusive. **Green infrastructure pays dividends just like schools, roads, and other infrastructure – in the form of healthier communities, new businesses and jobs, and reduced grey infrastructure costs.**
- The success of green infrastructure planning relies on the active involvement and engagement of individual and corporate property owners. **The effective management of green infrastructure assets is the result of many parties working together, using tools that reflect and respect the rights of land owners.**
- **The time is ripe to undertake green infrastructure planning projects in the Richmond and Crater Regions.** Extensive data are available. Multiple organizations – including the Richmond Regional Planning District Commission, the Crater Planning District Commission, the Capital Region Land Conservancy, and the Green Infrastructure Center – can bring resources and support to projects in the region. Finally, new green infrastructure tools and resources are available from state and federal agencies and non-governmental organizations.
- **New tools and resources are an important part of supporting green infrastructure planning in the Richmond and Crater Regions.** At the same time, many traditional tools, like Comprehensive Plans and zoning, can also be updated and enhanced to support outcomes that restore, manage, and protect the region's natural assets.
- **Green infrastructure planning tools and resources may be most helpful when implemented at the appropriate time and used in concert with other tools.** Future green infrastructure planning activities in the Richmond and Crater Regions should consider how multiple tools might work well together. These activities should also consider how the tools can best be implemented over the short and long-term (e.g., during scheduled updates to locality land use or comprehensive rezonings.)
- The Richmond-Crater Region Green Infrastructure project has started the process by identifying the region's green infrastructure assets. **Potential next steps could include education and outreach, the continued engagement of diverse stakeholders, and technical assistance and asset mapping at the local level.**



# NEXT STEPS

## opportunities for today...

This project represents the beginning of the Richmond and Crater Regions' exploration of a green infrastructure approach to regional and local land use planning.

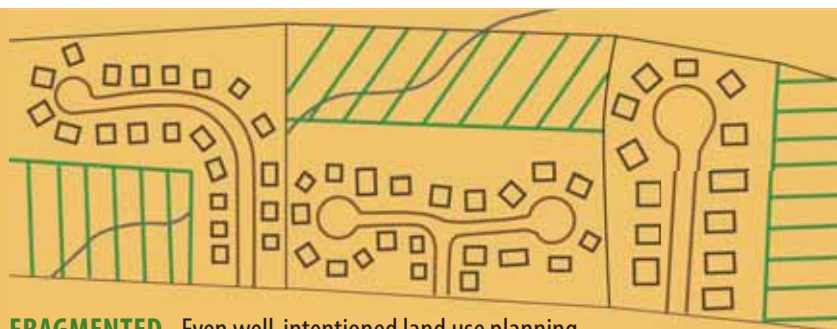
Participants in the project's workshops identified several examples of how project information can already be incorporated into planning activities across the region:

- *comprehensive planning and zoning*: identifying and protecting natural assets
- *park and open space planning*: informing park master planning efforts and acquisition
- *site plan review*: minimizing impacts to natural assets, providing incentives for enhanced natural asset management
- *transportation planning*: coordinating route expansions and alterations
- *water supply and water quality monitoring*: managing and enhancing water supply resources
- provide information to localities from the Natural Heritage Division of the Virginia Department of Historic Resources to help in the review of Environmental Impact Reviews
- assist in coordinating and defining the route for the East Coast Greenway
- make use of the Green Infrastructure Report to efficiently direct economic development

## and tomorrow...

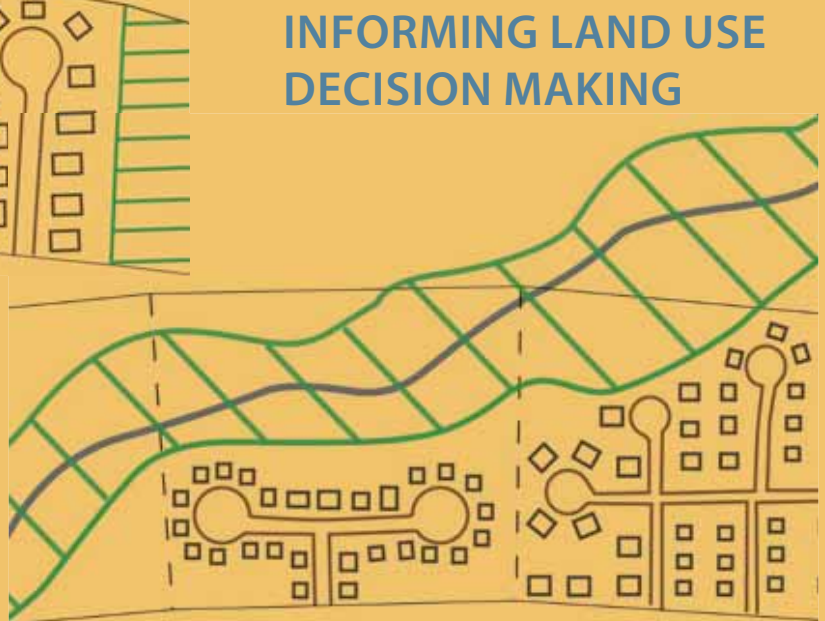
Looking to the future, the Richmond-Crater Region Green Infrastructure project can serve as a reference resource for upcoming planning activities. All parts of the project, including this report and the data used to create the project's maps, are designed to be "living" findings – materials that can be modified and updated over time. The Richmond Regional Planning District Commission (RRPDC) is hosting all information and data gathered as part of the project – the RRPDC will share the materials with all interested organizations upon request.

The RRPDC and the CPDC are also providing an opportunity for localities in the region to build their green infrastructure planning capacities. Urban localities in the region may choose to work with the RRPDC and CPDC to develop a local green infrastructure plan as part of the technical assistance provided annually to one locality each year. The region's smaller and rural localities may also request these services as part of the agencies' project and grant submittals. For example, a locality-level pilot green infrastructure project was prepared for New Kent County in 2008-2009. This project approach could be readily adapted for use by other localities in the Richmond and Crater regions.



**FRAGMENTED** - Even well-intentioned land use planning approaches can result in the fragmentation of a region's high-value natural assets.

**CONNECTED** - A green infrastructure planning approach allows for development and growth at the same scale, while also ensuring that a region's natural assets remain intact and well-connected.



## INFORMING LAND USE DECISION MAKING





## THE PROJECT

The Richmond-Crater Region Green Infrastructure project was made possible by the energy, dedication, and generosity of many individuals and organizations.

The Richmond Regional Planning District Commission, the Crater Planning District Commission, the Green Infrastructure Center\*, and the Capital Region Land Conservancy would like to thank the project participants who shared their voices as part of this project, as well as the project's sponsors who have made the project possible.

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**Virginia Coastal Zone**  
MANAGEMENT PROGRAM



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\*E<sup>2</sup> Inc. provided technical analysis, mapping, and research services for this project.